

## XLIV. FISHES FROM THE KOSI HIMALAYAS, NEPAL.

## INTRODUCTION.

In connection with the economic fishery survey of the Kosi river, sponsored by the Indian Council of Agricultural Research, Mr. K. K. Nair, Superintendent of Fisheries, Bengal, made an extensive collection of fish from the river in the Nepal territory, and particularly from regions above and below the proposed dam site at Barahakshetra. The collections were made at three different times : November 1947, January-February 1948, and April 1948. They were sorted out and provisionally identified by Mr. K. K. Nair, but they were again carefully gone through by the present author and a portion of the collection left unidentified by Mr. Nair was investigated. The collection can thus be regarded as a fairly representative one for the area, and consists of 11 families, comprising 26 genera and 52 species. A complete list of species, with zoogeographical remarks and notes on a few interesting forms are given in this paper.

The Kosi<sup>1</sup> is the most important river of Bihar. It rises in the eastern division of the hill ranges of the Nepal territory. The main river itself is formed of the confluence of seven rivers in a tract which is popularly known as the 'Sapt Kosi' or 'the country of the seven Kosis'. The most important branch is the San Kosi, which runs from west to east. At Barahakshetra the river leaves the mountains in a series of rapids and enters the plain as the Kosi river.

Before the river enters the plain, it is not very broad, the banks are rocky and steep, the water is deep and the current very strong. The collections were made mainly from side streams by damming up shallow portions and by blasting certain regions of the river with dynamite.

The following is the list of the species, with the localities whence they were collected and general distribution.

## LIST OF FISHES FROM THE KOSI HIMALAYAS.

| Systematic list of species.      | Number, size and locality of specimens.                                     | Distribution.   |
|----------------------------------|---|---|
| Family CYPRINIDAE                |   |   |
| Subfamily ABRAMIDINAE            |   |   |
| 1. <i>Chela argentea</i> Day     | 19 specimens : 66 to 75 mm.<br>Kokha nullah, Barahakshetra.                 | Nilgiris, Coorg, Mysore and Calcutta.                             |
| 2. <i>Chela gora</i> (Ham.)      | 7 specimens : 60 to 220.8 mm.<br>Chhatra ghat ; Nirmali.                    | Sind, throughout Northern India and Assam.                        |
| 3. <i>Laubuca laubuca</i> (Ham.) | 1 specimen : 48.5 mm.<br>From a stream about 2 miles west of Bisharia ghat. | " Ganjam, Orrisa, Bengal, Central India, Assam and Burma " (Day). |

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<sup>1</sup>O'malley, *Bengal Dt. Gazetteers*, XXV, p. 3-9 (1911).

Systematic list of species. Number, size and locality of specimens. Distribution.

Subfamily *RASBORINAE*

4. *Barilius bendelisis* (Ham.) 237 specimens: 17.5 to 93.5 mm. Kokha nullah; Chhatra. All along the base of the Himalayas and throughout the sub-continent of India.
5. *Barilius barila* (Ham.) 5 specimens: 67 to 71.5 mm. Kokha nullah, Barahakshetra. Northern India as far as Krishna in the South and Burma.
6. *Barilius shacra* (Ham.) 1 specimen: 63.5 mm. From the confluence of Tamur with the Kosi. "From Hardwar down the valley of the Ganges, North-west Provinces, and Assam" (Day).
7. *Danio aequipinnatus* (McClell.) 1 specimen: 76.5 mm. From a hill stream about 1½ miles from Chhatra, between Chhatra and Barahakshetra. Ceylon, India, Burma and Siam.
8. *Danio dangila* (Ham.) 1 specimen: 67.5 mm. Chhatra Bazar. "Bengal, Bihar, Himalayas at Darjeeling, also hills close Akyab" (Day).
9. *Danio devario* (Ham.) 1 specimen: 61 mm. Chhatra bazar. All over northern India, and Deccan.
10. *Rasbora daniconius* (Ham.) 2 specimens: 60.5 mm. Nilhol, about 26 miles from Chhatra. Widely distributed in the Oriental region.

Subfamily *CYPRININAE*

11. *Aspidoparia jaya* (Ham.) 2 specimens: 78.5-98 mm. Chhatra. "Hardwar on the Ganges and Assam" (Day).
12. *Aspidoparia morar* (Ham.) 14 specimens: 59 to 116.5 mm. Kosi river above the dam site. "Sind, Punjab, Continent of India (except the western coast and localities south of Kistna river) also Assam and Burma" (Day).
13. *Barbus (Puntius) chola* (Ham.) 6 specimens: 67.5 to 89 mm. Nirmali. India, Burma and further east.
14. *Barbus (Puntius) clavatus* (McClell.) 1 specimen: 117 mm. Chhatra Bazar. Northern Bengal and Assam.
15. *Barbus (Puntius) sarana* (Ham.) 3 specimens: 89 to 114 mm. Nirmali (Bihar) (Purchased). India, Burma and Yunnan.
16. *Barbus (Puntius) ticto* (Ham.) 1 specimen: 61.5 mm. From a stream on the track between Chhatra and Barahakshetra. Widely distributed in India, Burma and Siam.
17. *Barbus (Puntius) sophore* (Ham.) 10 specimens: 40 to 64.5 mm. Satpatia ghat about 6 miles from Nirmali. India, Burma and Yunnan.

| Systematic list of species.                            | Number, size and locality of specimens.   | Distribution.   |
|--|---|---|
| 18. <i>Barbus (Lissochilus) hexagonolepis</i> McClell. | 2 specimens : 117 and 230.8 mm. Kokha nullah ; Tamur river, Tribeni.                                      | Eastern Himalayas, Assam, Burma and Further east.   |
| 19. <i>Barbus (Tor) putitora</i> (Ham.)                | 33 specimens : 34.5 to 123 mm. Kokha nullah ; Chhatra.  | All along the Himalayas.  |
| 20. <i>Crossochilus latius</i> (Ham.)                  | 24 specimens : 59 to 102 mm. Nirmali market ; the Confluence of the Kosi river with the Tamur.            | Peninsular India, along the Himalayas and Burma.  |
| 21. <i>Cirrhina reba</i> (Ham.)                        | 9 specimens : 64 to 129.8 mm. Kosi river, Barahakshetra.  | India and Siam.   |
| 22. <i>Garra annandeli</i> Hora                        | 125 specimens : 25 to 94.5 mm. Kosi river, Chhatra ; Kokha nullah   | Darjiling Himalayas.  |
| 23. <i>Garra gotyla</i> (Gray)                         | 250 specimens : 49.5 to 72.5 mm. Kosi river, Chhatra.   | Along the base of the Himalayas (Kangra, Ravi river, Simla, Chumba, Gharwal, and Mahanadi river in Darjiling district). |
| 24. <i>Garra mullya</i> (Sykes)                        | 1 specimen : 85.5 mm. From a stream $1\frac{1}{2}$ miles from Chhatra, between Chhatra and Barahakshetra. | Vindhya, Satpuras & Peninsular India.   |
| 25. <i>Labeo angra</i> (Ham.)                          | 11 specimens : 119 to 183.4 mm. Kosi river, Chhatra.  | Assam, Bengal, Orissa and Burma.  |
| 26. <i>Labeo boga</i> (Ham.)                           | 1 specimen : 154.5 mm. Chhatra bazar.   | India and Burma.  |
| 27. <i>Labeo dero</i> (Ham.)                           | 94 specimens : 80 to 116 mm. Tamur river below its Confluence with Arun and Chhatra.                      | All along the Himalayas, Sind Hills, Assam and Burma.   |
| 28. <i>Labeo dyocheilus</i> (Ham.)                     | 1 specimen : 111 mm. Chhatra bazar.   | All along the Himalayas, Sind Hills, Assam and Burma.   |
| 29. <i>Labeo sindensis</i> (Day)                       | 4 specimens : 87 to 93.5 mm. Chhatra bazar.   | "Sind, Punjab (at Lahore and Hardwar) also the Deccan at Poona" (Day).  |

#### Family HOMALOPTERIDAE

|                                 |  |  |
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| 30. <i>Balitora brucei</i> Gray | 2 specimens : 33 and 34.5 mm. Bhagwanpur, Bagalpur Dt. | Darjiling, Khasi Hills, Assam, Tenasserim and also Mysore. |
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#### Family COBITIDAE

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| 31. <i>Botia lohachata</i> Chaudhuri | 111 specimens : 55 to 88.5 mm. Kosi river, Chhatra ; Kosi river at its confluence with Arun river ; Arun river ; and Kosi dam-site. | Bihar. |
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| Systematic list of species.                             | Number, size and locality of specimens.   | Distribution.   |
|---|---|---|
| 32. <i>Lepidocephalichthys guntea</i> (Ham.)            | 5 specimens : 47 to 75 mm. Bisharia ghat, 14 miles from Chhatra.                          | Throughout Northern India.                              |
| 33. <i>Nemachilus botia</i> (Ham.)                      | 2 specimens : 47 to 63.5 mm. Kokha nullah near its confluence with Kosi at Barahakshetra. | Ceylon, India and Burma.                                |
| 34. <i>Nemachilus rupicola</i> var. <i>inglisi</i> Hora | 57 specimens : 40 to 47 mm. Kokha nullah at Barahakshetra.                                | Eastern Himalayas, (rivers below Darjiling and Sikkim). |
| 35. <i>Nemachilus savona</i> (Ham.)                     | 4 specimens : 22 mm. From a stream of the Kosi at Bisharia ghat.                          | Eastern Himalayas.                                      |
| 36. <i>Nemachilus scaturigina</i> (McClell.)            | 31 specimens : 35.5 to 61.5 mm. Kokha nullah a mile and a half its confluence with Kosi.  | Eastern Himalayas and Assam.                            |

## Family SILURIDAE

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| 37. <i>Callichrous bimaculatus</i> (Bloch) | 4 specimens : 113 to 119.5 mm. Nirmali market. | India, Burma and further east. |
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## Family SCHILBEIDAE

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| 38. <i>Clupisoma garua</i> (Ham.)      | 2 specimens : 119-240.5 mm. From the confluence of Tamur with the Kosi. | Sind, Northern India, Assam and Burma.        |
| 39. <i>Eutropiichthys vacha</i> (Ham.) | 1 specimen : 370 mm. Kosi river about 3 miles from Nepal.               | Punjab, Sind, Bengal, Orissa, Burma and Siam. |

## Family BAGRIDAE

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| 40. <i>Mystus bleekeri</i> Day | 39 specimens : 47.5 to 119 mm. Nirmali market. | "Sind, Jumna, upper waters of Ganges and Burma" (Day). |
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## Family SISORIDAE

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| 41. <i>Gagata nangra</i> (Ham.)         | 1 specimen : 55 mm. Kosi river at Chhatra.   | Kosi and Hoogly river at Nawabgunj "Ganges, Jumna and Indus" (Day).        |
| 42. <i>Gagata viridescens</i> (Ham.)    | 3 specimens : 65 to 73.5 mm. Kosi river at Chhatra.  | Bengal and Assam. "Assam northern Bengal, Jumna at Delhi and Poona" (Day). |
| 43. <i>Glyptothorax annandalei</i> Hora | 40 specimens : 40.8 to 73.5 mm. Kosi river about 2 furlongs down its confluence with the Arun, Kosi river about a mile and a half down Barahakshetra temple and Kosi river at Chhatra. | Vindhya (Rihand river) Peninsular India and Nilgiris.                      |

| Systematic list of species.                    | Number, size and locality of specimens.  | Distribution.  |
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| 44. <i>Glyptothorax cavia</i> (Ham.)           | 11 specimens : 94.5 to 124.2 mm. Kosi river, Nepal; Kosi river Chhatra and Kosi river at Tribeni.  | Northern Bengal, Assam and Burma.  |
| 45. <i>Glyptothorax horai</i> Shaw & Shebbeare | 4 specimens : 83.8 to 120 mm. Kosi river, 3 miles down Nepal; Kosi river at Chhatra; Kosi river about a mile and a half down Barahakshetra temple. | Eastern Himalayas. (so far known only from the Tista valley and the Rihand river). |
| 46. <i>Glyptothorax telchitta</i> (Ham.)       | 1 specimen : 72.5 mm. Kosi river, Nepal.   | Northern Bengal, Bihar, and the Vindhya.   |
| 47. <i>Pseudecheneis sulcatus</i> (McClell.)   | 2 specimens : 97.5-89 mm. Kokha nullah about a mile up its confluence with Kosi.   | Darjiling Himalayas and Khasi Hills.   |

#### Family XENENTODONTIDAE

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| 48. <i>Xenentodon cancila</i> (Ham.) | 5 specimens : 130 to 165 mm. Nirmali market. | Ceylon, India, Burma and further east. |
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#### Family GOBIIDAE.

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| 49. <i>Glossogobius giuris</i> (Ham.) | 3 specimens : 72 to 104.5 mm. Nirmali market. | Ceylon, India, Burma and further east. |
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#### Family OPHICEPHALIDAE

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| 50. <i>Ophicephalus punctatus</i> Bloch   | 1 specimen : 63.5 mm. Satpatia ghat, 6 miles from Nirmali.   | India, Burma, Ceylon and Yunnan.                                |
| 51. <i>Ophicephalus stewarti</i> Playfair | 7 specimens : 113.5 to 147.5 mm. Kosi river at Chhatra, Kokha nullah about a mile up its junction with the Kosi river. | " Cachar and Assam in both running and standing waters " (Day). |

#### Family OSPHROMENIDAE

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| 52. <i>Colisa faciatu</i> s (Bl. Schn.) | 2 specimens : 29.5 and 30 mm. Satpatia ghat. | India and Burma. |
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#### ZOOGEOGRAPHICAL REMARKS.

It is well known to geographers and waterways engineers that the Kosi river has been undergoing a steady westerly movement for hundreds of years. It may be mentioned that in the early part of the 18th century, the Kosi flowed below the town of Purnea but it has gradually worked westwards across 75 miles of the country as is clearly evidenced by its deserted channels. The large commercial town of Nathpur, where Hamilton collected several species of fish from the Kosi river, was several miles

to the west of the river even up to 1850 but it has not only been washed away but the site of its ruins lies now many miles to the east of the river.

The westward movement of the Kosi is also strongly marked in its fish fauna. The occurrence in the collection under report of the most highly evolved torrential fishes, such as *Balitora brucei*, *Pseudecheneis sulcatus*, *Glyptothorax annandalei*, *Glyptothorax cavia*, *Glyptothorax horai*, several species of *Nemachilus* and *Lissochilus hexagonolepsis* shows the close affinity of its fish fauna to that of the Tista river, Eastern Himalayas and the Assam Hills. The present day composition of its fish fauna is suggestive of the fact that some of its earlier tributaries must have drained the region of the Darjeeling Himalayas and are now probably the feeder streams of the Tista River. Detailed account of the zoogeography of the Himalayas as evidenced by the distribution of fishes will be discussed when an account of the fish fauna of its various regions is completed.

#### SYSTEMATIC NOTES ON CERTAIN SPECIES.

##### **Barbus (Puntius) clavatus (McClell.).**

1921. *Barbus (Puntius) clavatus*, Hora, *Rec. Ind. Mus.* XXII, pp. 185, 186.

*Barbus clavatus* is represented by a single specimen measuring 90.5 mm. in total length. In all the important characteristics, the specimen agrees well with Hora's description of the species, except colouration, which is light yellowish on the back and silvery all over the rest of the body.

*Barbus clavatus* has so far been recorded from northern Bengal and Assam and its occurrence in the Kosi extends its range of distribution westwards along the Himalayas.

##### **Garra mullya (Sykes).**

1921. *Garra mullya*, Hora *Rec. Ind. Mus.* XXII, pp. 658-660.

There is a single, well preserved specimen in the collection and it conforms in all details to specimens from Peninsular India.

*Garra mullya* is a very widely distributed species of the Peninsular India, and has also been recorded from the Vindhya and the Satpuras. Its occurrence in the Kosi river is of considerable interest as this is the first record of the species from the Himalayas.

##### **Balitora brucei Gray.**

1932. *Balitora Brucei*, Hora, *Mem. Ind. Mus.* XII, pp. 290, 291.

Two juvenile specimens, measuring approximately 34 mm. each, represent *Balitora brucei* in the collection under report. These specimens agree well with the forma typica (Hora, *loc. cit.*, p. 197, 198 and 199) in all the important features. However, in these specimens the head is slightly pointed which may probably be a juvenile character.

According to Hora (*loc. cit.*, p. 292) this species is found in "India (Khasi Hills, Assam, Darjiling, Eastern Himalayas, and the Chittagong Hill tracts), and Burma (Meekalan and Meelan, Lower Burma; Myitkyina District, Upper Burma and Megla stream on Burma-Siam border)".

Its occurrence in the Kosi is, therefore, of some interest from the point of view of the geographical distribution of the species.

**Glyptothorax annandalei** Hora.

1923. *Glyptothorax annandalei*, Hora, *Rec. Ind. Mus.* XXV, pp. 14-16.

*Glyptothorax annandalei* is represented by a large number of specimens in the collection and they agree well with the description of the species by Hora. So far this species is known only from the Peninsular India and the Vindhya, and this is the first record of the species from the Himalayas.

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